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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,534	09/22/2003	Adan Rios	RIOS:004USC2/10311652	9949

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EXAMINER	
PARKIN, JEFFREY S	

ART UNIT	PAPER NUMBER
1648	

MAIL DATE	DELIVERY MODE
07/10/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/667,534	RIOS, ADAN	
	Examiner	Art Unit	
	Jeffrey S. Parkin	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4050* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-50* is/are rejected.

7)☒ Claim(s) *4047* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Office Action

Status of the Claims

Claims 40-50 are pending in the instant application. The decision (mailed 31 March, 2009) set forth by the Board of Patent Appeals and Interferences is duly noted and considered below where relevant. Upon further perusal of the claims and prior art prosecution on the merits has been reopened to address a number of additional considerations that render the claims unpatentable. To facilitate the expeditious prosecution of this application, Applicant's representative is invited to contact the Examiner to discuss the remaining issues and their resolution.

37 C.F.R. § 1.75(c)

Claims 40-47 stand objected to under 37 C.F.R. § 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claims in proper dependent form, or rewrite the claim(s) in independent form. As previously set forth, the claims do not refer back in the alternative only, or **refer to a preceding claim**, or reference two sets of claims with different features, or reference another multiple dependent claim. Refer to M.P.E.P. § 608.01(n). Applicant should consider canceling claims 40-47 and resubmitting them as new claims 57-64.

35 U.S.C. § 112, First Paragraph

The following is a quotation of the first paragraph of 35

U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Written Description

The previous rejection of claims 40-50 under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention, is hereby withdrawn in response to the decision rendered by the Board.

New Grounds of Rejection

Nonstatutory Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 U.S.P.Q.2d 1226 (Fed. Cir. 1998); *In re*

Goodman, 11 F.3d 1046, 29 U.S.P.Q.2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 U.S.P.Q. 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 U.S.P.Q. 761 (C.C.P.A. 1982); *In re Vogel*, 422 F.2d 438, 164 U.S.P.Q. 619 (C.C.P.A. 1970); and *In re Thorington*, 418 F.2d 528, 163 U.S.P.Q. 644 (C.C.P.A. 1969). A timely filed terminal disclaimer in compliance with 37 C.F.R. § 1.321(c) or § 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 C.F.R. § 3.73(b).

Claims 40-43 and 48 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-13 and 15-17 of U.S. Patent No. 6,383,806 (Rios, 2002). Although the conflicting claims are not identical, they are not patentably distinct from each other. The claims of the instant application are directed toward a method of eliciting an immune response comprising administering a viral particle wherein the RT has been inactivated through binding to an azido-labeled compound and irradiation. Claims 40 and 41 recite specific azido-labels. Claim 42 recites UV irradiation. Claims 43 and 44 specify the virus is HIV or HIV-1, respectively. Claims 11-13 and 15-17 of the '806 patent are directed toward a method of inducing an immune response in a host by administering HIV viral particles that have been

inactivated through azido-labeled compounds and UV irradiation. Accordingly, the claims of the '806 patent clearly anticipate the claimed subject matter of the instant application.

Claims 44-47 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11-13 and 15-17 of U.S. Patent No. 6,383,806 (Rios, 2002), and further in view of Ferrari *et al.* (1997). Although the conflicting claims are not identical, they are not patentably distinct from each other. Claims 44-47 of the instant application provide additional embodiments pertaining to the origins and strain of HIV employed (e.g., Group M, subtype or clade B). Ferrari *et al.* (1997) discuss the importance of developing cross-clade immune responses against HIV to provide a more effective immunogen. Therefore, it would have been *prima facie* obvious at the time filing to prepare inactivated HIV-1 virions, using the Method of Rios, from multiple clades, as suggested by Ferrari *et al.* (1997), since this would provide a more efficacious immunogen.

35 U.S.C. § 112, First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Enablement

Claims 49 and 50 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 49 and 50 are directed toward a method of eliciting an immune response in a human, particularly a protective or therapeutic response (see claim 50 wherein the term vaccination is employed). Claim 49 is also included in this rejection because the only disclosed use for the claimed compound vis-à-vis humans was as an HIV vaccine. For example, see p. 22 of the specification wherein it was clearly stated that "the present invention provides an immunogenic composition that may be used as a vaccine against HIV infection and its consequences, including AIDS and AIDS-related conditions." On p. 29 of the disclosure Applicant unequivocally states that "the inventor contemplates the application of the present invention as a vaccine to HIV in humans." The term vaccine is art-recognized and references a composition that is capable of preventing or treating viral infection.

The legal considerations that govern enablement determinations pertaining to undue experimentation have been clearly set forth. *Enzo Biochem, Inc.*, 52 U.S.P.Q.2d 1129 (C.A.F.C. 1999). *In re Wands*, 8 U.S.P.Q.2d 1400 (C.A.F.C. 1988). *Ex parte Forman* 230 U.S.P.Q. 546 (PTO Bd. Pat. App. Int., 1986). The courts concluded that several factual inquiries should be considered when making such assessments including the quantity of experimentation necessary, the amount of direction or

guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the relative skill of those in that art, the predictability or unpredictability of the art and the breadth of the claims. *In re Rainer*, 52 C.C.P.A. 1593, 347 F.2d 574, 146 U.S.P.Q. 218 (1965). The disclosure fails to provide adequate guidance pertaining to a number of these considerations as follows:

1) The state-of-the-art vis-à-vis viral vaccine development can be characterized by failure and unpredictability (Wang, 2003; Gallo, 2005; Walker, 2008). Although the Examiner will focus on HIV in particular, many of the caveats discussed here are applicable to other viruses. To date there are no effective HIV-1 vaccines. Several factors have contributed to the failure of HIV vaccines including a lack of understanding of the correlates of human protection, a lack of understanding pertaining to suitable vaccine formulations, adjuvants, and routes of administration, the quasispecies nature of HIV infection which leads to immune evasion and/or escape, the ability of different viral proteins to impact normal cellular functions (e.g., down-modulate CD4 or MHC molecules), the ability of HIV to target and destroy critical immune cells (e.g., $CD4^+$), the ability of the virus to reside in a quiescent manner, the ability of the virus to form a glycan shield on the envelope thereby minimizing its immunogenicity, and the lack of adequate animal models with which to assess vaccine efficacy. Wang (2003) adequately summarizes (see p. 1781, CONCLUSION) the state-of-the-art as follows: "a highly promising vaccine capable of eliciting broadly neutralizing antibody responses in humans is still not in hands. HIV has evolved major strategies such as envelope spike formation, rapid mutation, heavy glycosylation, and

conformational change to escape host immune surveillance. The immune evasion poses formidable obstacles faced in HIV vaccine development."

2) The claim breadth is excessive and unsupported by the disclosure. The claims are simply directed toward any "viral" particle comprising an inactivated RT, irrespective of the source (e.g., retroviral, lentiviral, herpesviral, adenoviral, etc.). Moreover, the claims encompass reverse transcriptase enzymes obtained from a plurality of different sources (i.e., HIV-1, HIV-2, SIV, EIAV, Visna, Maedi, FIV, BIV, Mo-MLV, MMTV, etc.). These viruses are all genotypically and phenotypically distinct. They infect different hosts, tissues, cell types, and display different pathologies. The correlates of human protection for many of these viruses remain to be elucidated. Thus, the skilled artisan would readily question the ability of a viral particle comprising an inactivated RT to provide a therapeutic or prophylactic response in these varied settings.

3) The disclosure fails to provide any working embodiments. Considering the unpredictability associated with viral vaccine development and the claim breadth, multiple working embodiments would be required to enable the full breadth of the patent protection desired.

Accordingly, when all the aforementioned factors are considered *in toto*, it would clearly require undue experimentation from the skilled artisan to practice the claimed invention.

Correspondence

Any inquiry concerning this communication should be directed to Jeffrey S. Parkin, Ph.D., whose telephone number is (571) 272-0908. The examiner can normally be reached Monday through

Thursday from 10:30 AM to 9:00 PM. A message may be left on the examiner's voice mail service. If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Larry R. Helms, can be reached at (571) 272-0832. Direct general status inquiries to the Technology Center 1600 receptionist at (571) 272-1600. Informal communications may be submitted to the Examiner's RightFAX account at (571) 273-0908.

Applicants are reminded that the United States Patent and Trademark Office (Office) requires most patent related correspondence to be: a) faxed to the Central FAX number (571-273-8300) (updated as of July 15, 2005), b) hand carried or delivered to the Customer Service Window (now located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314), c) mailed to the mailing address set forth in 37 C.F.R. § 1.1 (e.g., P.O. Box 1450, Alexandria, VA 22313-1450), or d) transmitted to the Office using the Office's Electronic Filing System. This notice replaces all prior Office notices specifying a specific fax number or hand carry address for certain patent related correspondence. For further information refer to the Updated Notice of Centralized Delivery and Facsimile Transmission Policy for Patent Related Correspondence, and Exceptions Thereto, 1292 Off. Gaz. Pat. Office 186 (March 29, 2005).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Respectfully,

/Jeffrey S. Parkin/
Primary Examiner, Art Unit 1648

08 July, 2009

Appendix A: Claims from U.S. Patent No.: 6,383,806 B1

(12) **United States Patent**
Rios

(10) **Patent No.: US 6,383,806 B1**
(45) **Date of Patent: May 7, 2002**

(54) **METHOD FOR THE DEVELOPMENT OF AN HIV VACCINE**

(76) Inventor: **Adan Rios**, 4007 Shallow Pond Ct., Sugar Land, TX (US) 77479

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No. **09/249,391**

(22) Filed: **Feb. 12, 1999**

Related U.S. Application Data

(60) Provisional application No. 60/074,646, filed on Feb. 13, 1998.

(51) **Int. Cl.**[7] **C12N 5/06**; C12N 5/00, C12Q 1/70; G01N 33/53

(52) **U.S. Cl.** **435/339.1**; 435/5; 435/7.1; 435/325

(58) **Field of Search** 435/5, 7.1, 325, 435/339.1

(56) **References Cited**

U.S. PATENT DOCUMENTS

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Rossio et al., "Inactivation of Human Immunodeficiency Virus Type 1 Infectivity with Preservation of Conformational and Functional Integrity of Virion Surface Proteins," *J. Virology*, 72(10):7992–8001, 1998.
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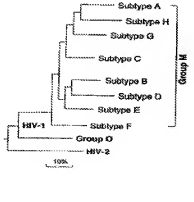
(List continued on next page.)

Primary Examiner—Hankyel T. Park
(74) *Attorney, Agent, or Firm*—Pillsbright & Jaworski L.L.P.

(57) **ABSTRACT**

Human immunodeficiency virus (HIV) comprising reverse transcriptase inactivated by photoinactivation used to evoke an immune response. The immune response may protect an individual from challenges with live virus. Alternatively, the inactivated HIV particles may be used to augment the immune response to HIV in an infected individual.

17 Claims, 1 Drawing Sheet



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Zhang, Dornadula, Pomerantz, "Endogenous reverse transcription of human immunodeficiency virus type 1 in physiological microenvironments: an important stage for viral infection of nondividing cells," *J. Virol.*, 70:2809–2824, 1996.

What is claimed is:

1. A method of invoking an immune response in an animal which comprises administering to said animal a composition comprising a pharmaceutically-acceptable excipient and an HIV particle comprising inactivated reverse transcriptase, wherein said reverse transcriptase has been inactivated by a method comprising binding said reverse transcriptase with one or more compounds that binds said reverse transcriptase and then irradiating said HIV particles with UV light.

2. The method of claim **1**, wherein said immune response is a cellular response.

3. The method of claim **1**, wherein said immune response is a humoral response.

4. The method of claim **2**, wherein said cellular response comprises CD8+ T cells.

5. The method of claim **2**, wherein said cellular response comprises CD4+ T cells.

6. The method of claim **1**, wherein said animal is a mammal.

7. The method of claim **1**, wherein said mammal is a PBL-SCID mouse or a SCID-hu mouse.

8. The method of claim **6**, wherein said mammal is human.

9. The method of claim **1**, wherein said animal is HIV-negative.

10. The method of claim **1**, wherein said animal is HIV-positive.

11. The method of claim **1**, wherein said compound is an azido-labeled compound.

12. The method of claim **11**, wherein said azido-labeled compound is azido dipyridiazepinona or N-[4-chloro-3-(3-methyl-2-butenyloxy)phenyl]-2-methyl-3-furanocarbothiamide.

13. The method of claim **12**, wherein said azido-labeled compound is N-[4-chloro-3-(3-methyl-2-butenyloxy) phenyl]-2-methyl-3-furanocarbothiamide.

14. A method of invoking an immune response in an animal which comprises administering to said animal a composition comprising a pharmaceutically-acceptable excipient and an HIV particle comprising inactivated reverse transcriptase, wherein said reverse transcriptase has been inactivated via binding said reverse transcriptase with at least one compound that binds said reverse transcriptase and then irradiating said HIV particle with UV light.

15. The method of claim **14**, wherein said compound is an azido-labeled compound.

16. The method of claim **15**, wherein said azido-labeled compound is azido dipyridiazepinona or N-[4-chloro-3-(3-methyl-2-butenyloxy)phenyl]-2-methyl-3-furanocarbothiamide.

17. The method of claim **16**, wherein said azido-labeled compound is N-[4-chloro-3-(3-methyl-2-butenyloxy) phenyl]-2-methyl-3-furanocarbothiamide.

* * * * *